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Subscription $3 Per Year

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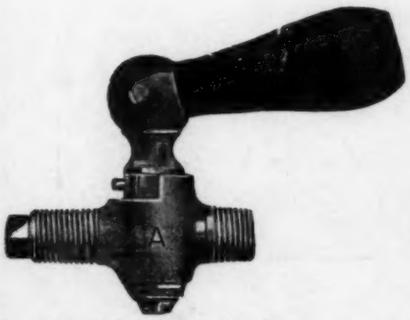

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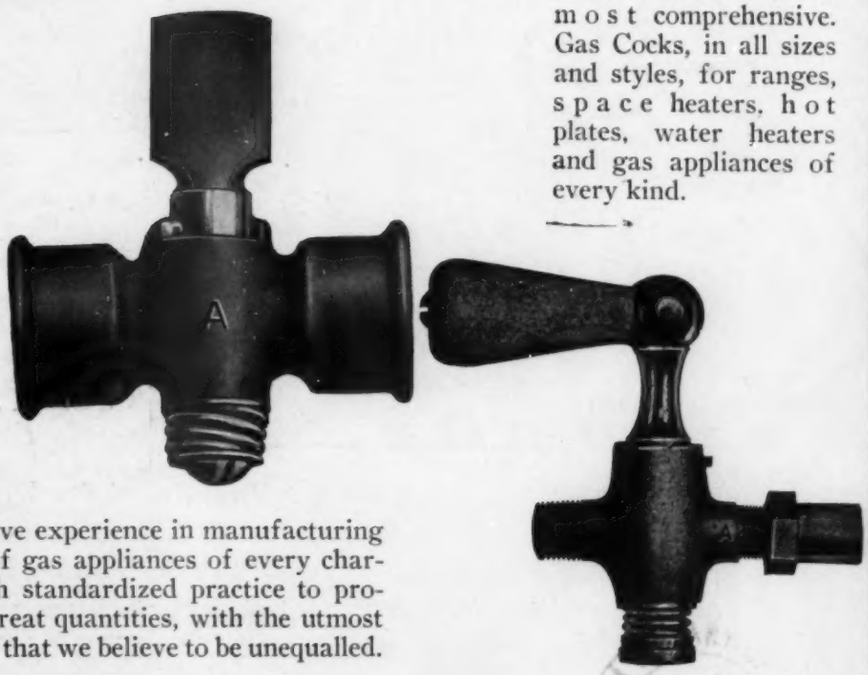

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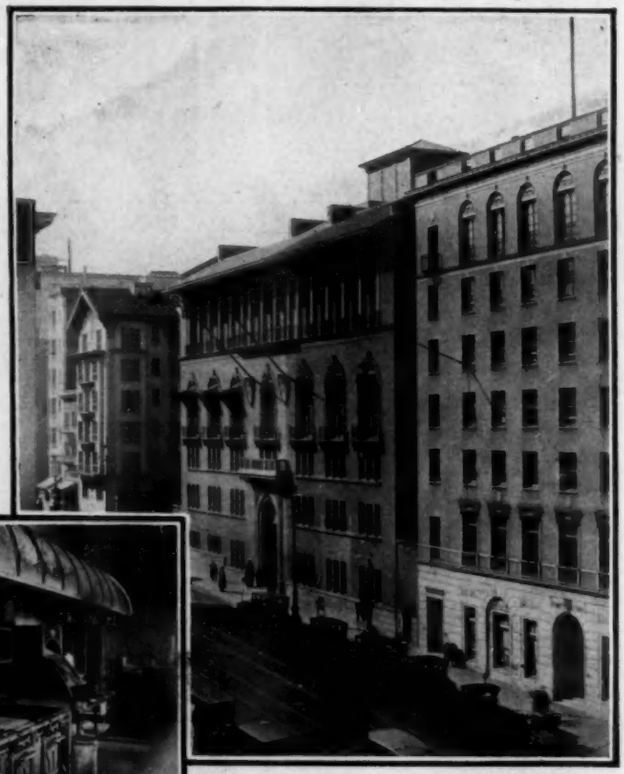
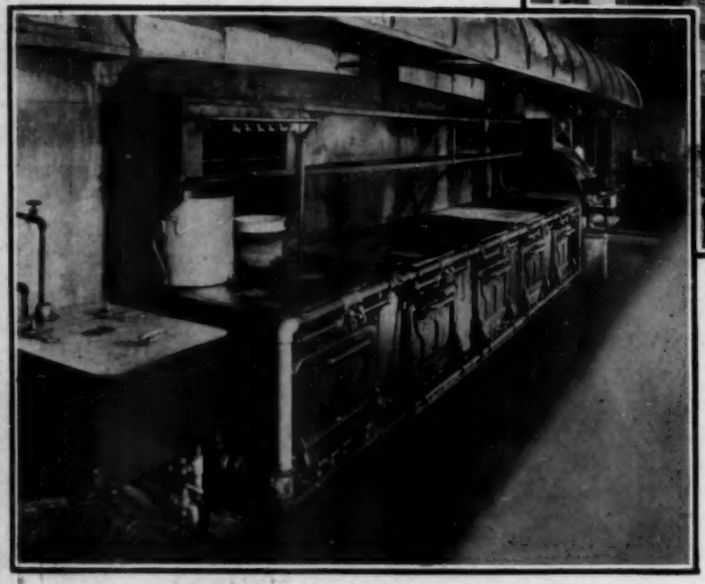
Largest athletic club exclusively for women in the country select the Sexton Hot Top Hotel Gas Range





Women's Athletic Club of San Francisco, Cal.

In planning the beautiful Woman's Athletic Club of San Francisco, the kitchen equipment was an important detail; the very best was desired, therefore, they selected 5 Sexton Patented Hot Top Hotel Gas Ranges with double plate shelf over four sections and salamander broiler over one section. One of the features of this equipment is the Sexton Patented Gas Control, eliminating from 4 to 8 cocks per section, making it very simple to turn off the gas and insuring economical use of fuel. Sexton Ranges are the very latest in design and are made to meet all requirements.

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Established 1839

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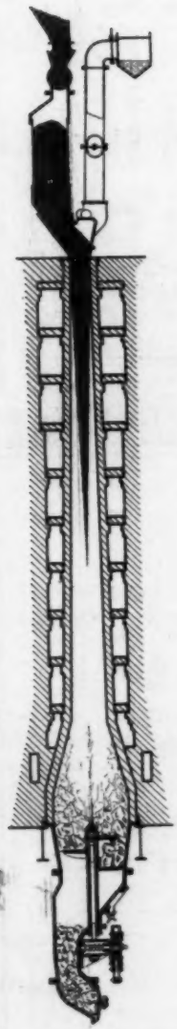
American Installations



Fitchburg, Mass.
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Pawtucket, R. I.
Portland, Me.
Ottawa, Ont.
Montreal, Que.
Fitchburg, Mass. (Repeat)
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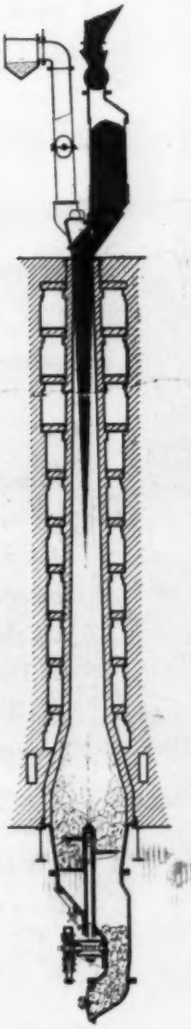

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SIXTY-SIXTH YEAR

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"MEMBER OF THE AUDIT BUREAU OF CIRCULATIONS"

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Vol. 122. No. 24 NEW YORK, JUNE 13, 1925 Whole No. 3524

Bituminous Coal As Generator Fuel

Actual successful results gainsay objections retarding extensive development

G. H. Smith

Gas Engineer, Central Hudson System

THE title of this article is going to be misleading, as I shall not only attempt to indicate what can be done with bituminous generator fuel, but I am also going to take a large part of the industry to task for not grasping an opportunity.

What's the matter with the industry? That's the question that can be asked, and many different answers would probably be given. The old saying that large bodies are slow to move seems to apply in our case.

The writer has recently had contact with a great many gas men and discussed quite freely the present status and what the future holds for the industry. Frankness compels me to say that if the future of the industry is to depend on some of our people then our progress will be slow. We owe a great deal to the comparatively few men in our industry with vision who are giving unstintingly of their time to research and development in the hope that gas can be made and distributed at such a price that will allow it to take its place as the most efficient fuel yet discovered.

Co-operation Necessary for Progress

Such institutions as our appliance manufacturers', striving for efficiency of utilization, should be backed up by efficiency of utilization of raw material in our plants and distribution systems, to the end that we can sell our product in competition with other fuels with the full realization that it costs less for the duty delivered. That is what our future depends on, and nothing must stand in the way of a broad realization of this fact.

The writer has been strongly impressed by the inertia of some of our companies in grasping what seems to be an opportunity in the use of bituminous generator fuel. In some cases such attitude may be justified, but in many cases it did not seem so. Below will be found some of the questions and statements brought out, answers to which will be attempted.

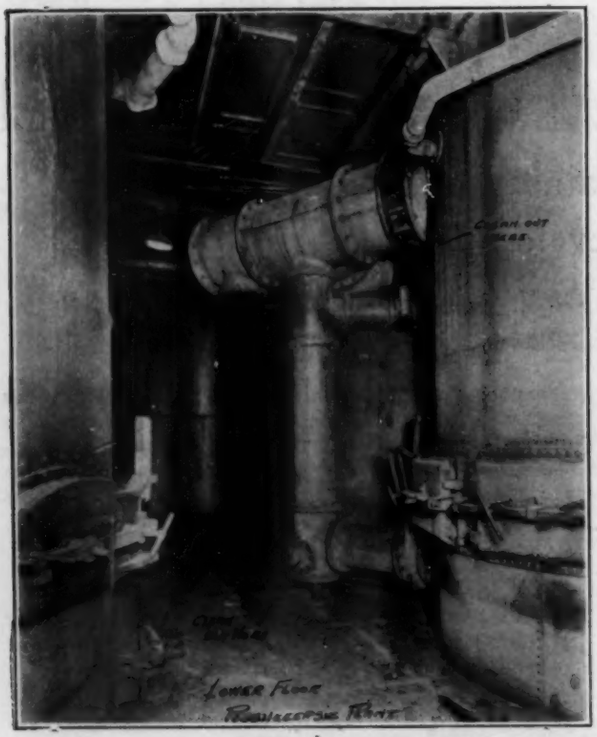
Some Excuses and Queries

1. We went all through this ten years ago and it didn't go. We had some steam coal in the yard and tried it and it wouldn't work.
2. You can't keep the capacity up without the blow run, and this introduces inerts in excessive amount.
3. We tried the blow run some years ago and nearly blew up the plant.
   jimholt June 8 Lg....|---fi-F
4. You can't tell me that an air purge is economical.
5. What's going on in the meters, are you depositing gummy substances?
6. How about sticking valves on the generator sets?
7. If you use the blow run on coke, you could get the same efficiency.
8. Soft coal mats and smokes and gives all kinds of trouble.

Steam Coal

Now steam coal is quite different from gas coal. The low volatile steam coal does not make a rich blue or producer gas; consequently it cannot be used with the same economy as can gas coal. The sizing of steam coal is, as a rule, not well fitted to generator use and, furthermore, the ash content is usually

higher. In our experience we believe that the sizing and cleanliness of the coal has a great deal to do with success in its use. The coking qualities of the coal also effect results, and coal that breaks up into small pieces under the pressure of the heat of the generator, and which is then blown over into the carburetter and superheater, may not be the best coal to use, although it may be cheapest to buy. The grade of the coal, as well as its physical and chemical properties, is half the battle. We have used gas coals in our experience that do not give us the same results as other gas coals, so that the mere fact that



Part of the Gas-Making Installation in the Poughkeepsie Plant

a coal is a gas coal does not give the whole answer. Do not be misguided by some ancient experiment, but get into the lane of progress and help the industry.

Inerts

To use gas coal in mixtures with coke efficiently as generator fuel we must make use of the volatile in the coal. In anthracite, gas coal and coke the following is typical of the carbon content of these fuels:

	Anthracite	Coke	Gas Coal
Fixed carbon %.....	75	85	55

If we are to run these fuels as generator fuel purely on the basis of the carbon contained therein, then the coke has the highest value as a generator fuel on the basis of each fuel bearing the same price perton.

In fact, if we were to use any of these fuels without the blow run, the relative gas yields or set capacity would vary almost in proportion to the carbon content of the fuel.

We realize, of course, that there are other factors that enter into set capacity such as ash content of fuel, as well as fusing temperature of ash, but the carbon content is perhaps one of the most important constituents of the anthracite and coke fuels.

Importance of Volatile Matter in Gas Coal

In anthracite and coke the constituents other than carbon and a small amount of volatile in the case of anthracite, are useless. In the case of gas coal, however, there is also contained in the coal from 33 to 37 per cent volatile of a high heating value, which, if conserved and put into the finished gas, will tend to lower the fuel average per M. cu. ft., as well as maintain the capacity of the set.

The conservation of the volatile matter in the gas coal as generator fuel is what makes it economical to use the blow run, which comprises a system of operations by which at the end of a blow the generator blast valve is opened and the volatile, or a portion of it, is blown into the holder.

In our operation we now blow the generator fuel bed until it is ready to make gas; then we charge the gas coal and put on a blow run and then a steam run of double the length of time, with half the steam of a regular run. This is for the purpose of getting the volatile off the coal and of conserving as much of it as possible.

Inerts Do Not Interfere

In our case we introduce in the amount of approximately 20 per cent of the total gas produced into the gas blow run and purge gases. The inerts introduced under these conditions are not excessive and do not in any way interfere with the operation of the distribution system or appliances. This is done with bituminous coal and coke mixtures with the bituminous coal up to 60 per cent of the total. This 20 per cent of the producer gas is introduced throughout the set operation, making the duration of the blow run portion of the cycle depend on whether or not a new charge of bituminous coal has been made. For instance, immediately after a charge, a longer blow run should be made than later on in the cycle. With our operation we get the same capacity with a 60-40 mix as we do with 100 per cent coke.

There are many men in the industry who are allowing progress to be hampered by this subject of inerts. What we, as gas men, must do, is to find the end point of economies in relation to operation with bituminous coal, then present our case and fight for the thing that is best for the public, as well as for the industry. Nothing should be allowed to stand in the way of progress and development.

(Continued on page 517)

Apple, Mince or Peach?

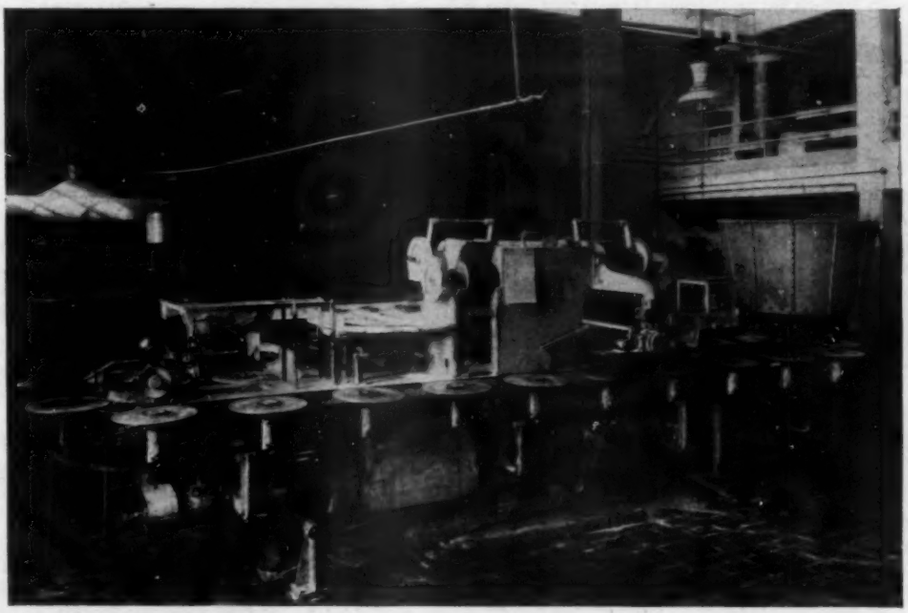
Making the American dessert with gas

H. S. Christman

PIE baking on a wholesale scale is rapidly developing into practically a mechanical process. Gas-fired traveling ovens are replacing coal-fired ovens and machinery has either been perfected or is in the last stages of development that will deliver your favorite pie to you untouched by hands.

With the old method of pie baking almost all the operations were performed by hand. The crust dough was mixed, kneaded, rolled, cut, placed in the pans and trimmed by hand. Then the fruit or other "filler," which had been prepared by hand, was put in, and the upper crust added. The pies were then baked in coal or coke-fired ovens. Some of these ovens contained stationary racks on which the pans were placed, while a later type consists of a large brick oven housing a revolving table on which the pies are placed to bake.

The performance of each of these operations required considerable skill and production depended upon the number of people employed for each operation and their capabilities. Thoroughly experienced bakers had to watch the ovens constantly to obtain proper baking conditions.



This Is the Machine that Makes the Pies Ready for the Oven

The Modern Method

Today the pie filler is prepared and the dough mixed, kneaded, cut, rolled and inserted in pans, the filler and top crust added, the crust crimped, trimmed, marked and sugared, all by machinery. A conveyor then takes unbaked pies to a revolving table directly in front of the gas-fired traveling oven, from which they are lifted by the oven attendant and placed on the oven racks. These racks, spaced about a foot apart and holding six to eight pans each, are conveyed by an endless chain back and forth from bottom to top throughout the length of the oven. The temperatures in the oven and the speed of the conveyor are so regulated that the pies are perfectly baked when they arrive at the discharge end of the oven, where another attendant removes them from the racks to tray buggies, which take them to the delivery wagons.

The accompanying illustrations show a recently installed traveling gas-fired oven and some of the auxiliary pie-baking machinery in the bakery of the Hutchinson Baking Company of Philadelphia.

The Oven

This oven is approximately 7 feet wide, 9 feet high and 20 feet long. Its capacity is 2,000 ten-inch pies per hour. The conveyor is driven by an electric

(Continued on page 515)

Making Friends of the Housewives

How a large gas company gives home service

W. B. Stoddard

THE old idea of a public utility company was that it existed more for the purpose of paying the largest possible dividends to its stockholders than of rendering most efficient service to its customers. The modern conception is far different. True, every company wishes to pay the largest dividends possible, but they have taken slogan of the big milk companies to heart—"Milk from Contented Cows." Just as paying attention to the comfort of their cattle increases the flow of milk, so does increasing their service to the customer result in a far greater use of gas and gas appliances.

The Laclede Gas Light Company of St. Louis is known to be one of the most progressive of gas companies and its Home Service Department has made the company known to thousands of housewives of St. Louis and vicinity. In the basement of its big remodeled offices and salesrooms is a large model kitchen, which is in constant use, under the supervision of Miss Helen Wetherell. She has under her three demonstrators and assistants. Free cooking classes are held each week day at 2 p. m., except on Saturday, and, in addition, for the benefit of business women (many of whom have a great desire to learn to cook) an evening class is held at 7:15 on Monday evenings. That the women appreciate the opportunity to receive expert advice is apparent from the records, which show that between 3,500 and 4,000 have availed themselves of the privilege of the classes during the few months the school has been in operation.

Advertising Home Service

The advertisements of the Home Service Department possess a decided personality and all who read them are filled with the desire to attend the lectures and demonstrations. For example, the school girls and the young matrons, with thoughts on the social season and the time when they will have to return accepted hospitality, are delighted when they run across an ad reading:

WHAT WILL YOU SERVE TO YOUR GUESTS AT YOUR NEXT HOUSE PARTY?

Our Home Service Department has a class at 2:00 p. m. every Friday on Party plans. Tomorrow experts will prepare and cook for this class the following menu:

Jellied Salmon Parsnip Puffs Walnut Drops

No charge. You are invited.

They disseminate the news and they are on hand when the Friday demonstration takes place. Miss Wetherell knows that her auditors know how to prepare coffee or cocoa, so no time is wasted in demonstrating these. But she knows, too, that many young hostesses rack their brains to think of something new and dainty to serve at their evening parties; so she is constantly thinking up new and enticing menus. These are cooked in full view of the audience by her assistants, while she gives a short talk on each item on the list. She casually mentions the convenience of gas in cooking, but the audience not only hears about, but sees for itself the ease with which gas cooks these dishes, but also sees for itself how they are prepared on the modern gas range.

HOW AND WHAT TO BUY
FOR
THE TABLE IS A PROBLEM
Come to OUR FREE COOKING CLASS at 2 p. m. to day and hear suggestions on Marketing (second in a series of talks) by one of our trained Home Service Demonstrators.
Flours, rice, barley, cereals and the like will be discussed today.
Menu for the Cooking Demonstration Today:
RICE BREAD
SOUTHERN CORNBREAD
EGGLESS MUFFINS
Menu for Evening Class, 7:15 P. M.
Eggless Graham Bread
Baked Cauliflower with Tomato and Bread Crumbs
Carrot Salad
FREE COOKING CLASSES EVERY WEEKDAY BUT SATURDAY AT 2 P. M. EVENING CLASSES ALSO EVERY MONDAY AT 7:15 P. M.
NO CHARGE. YOU ARE INVITED.
Home Service Department
The Laclede Gas Light Company
Olive at Eleventh
Central 3800

Aid on Other Domestic Problems in Advertisement

Cooking Classes for Men

To how many has it occurred that lots of men like to cook? It was a clever idea of the company to appeal to this class in one of their ads:

LEARN TO COOK

An evening cooking class at the LACLEDE GAS LIGHT CO. every Monday evening at 7:15. No charge—You are invited.

MEN ESPECIALLY INVITED

Then, in a lighter vein, there is an ad suggesting spring foods:

FASHIONS COME FROM PARIS

But You Can Get the Food Styles Here

(Continued on page 516)

INDUSTRIAL GAS LESSONS

IF IT'S DONE WITH HEAT — YOU CAN DO IT BETTER WITH GAS

Lesson No. 74

Heat and Change of State

Further Examples of Calculation

THE two following examples of calculation are interesting. A mass of pig iron, which has a total weight of five tons and a temperature of 2,000 degrees F., is cooled by immersing it in water at a temperature of 60 degrees F. It is found that one-half of the water is evaporated by boiling. The question is, how much water was present in the first place?

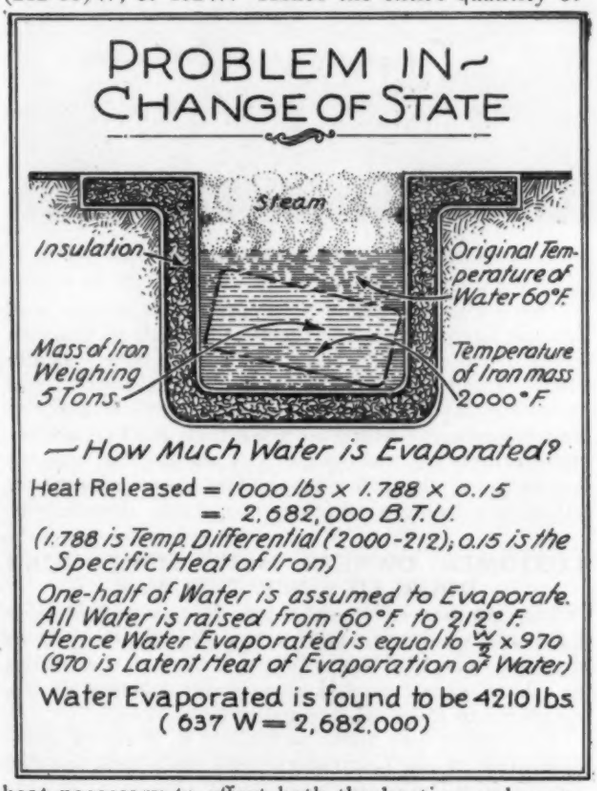
The first thing to determine is the final temperature of the water, which will, of course, be the final temperature of the iron. For, in order that the system reach equilibrium, as it does when half of the water is evaporated, the temperature of the hot body must become equal to that of the cold body, which in this case must be 212 degrees F., the boiling point of water.

The next step in the calculation is to determine the heat that is liberated by the hot mass of iron, which will be the product of the weight of the iron and the specific heat and the temperature differential. It has been indicated that the specific heat of a solid is not an absolute constant, but varies according to the temperature and in very accurate calculations, which, of course, do not have to be followed out when determining heat exchanges that occur in practical operation, a different specific heat must be employed for each temperature range. In this case the specific heat is taken to be 0.15 on the average. The temperature differential is found by subtracting the final temperature of the mass of iron, or 212 degrees F., from the initial temperature, or 2,000 degrees F., a difference of 1,788. The calculation then takes this form:

Heat released is equal to $10{,}000 \times 1{,}788 \times 0.15$, or 2,682,000 B.t.u.

Quantity of Water Evaporated

The next question is how much water will be evaporated by this quantity of heat and, furthermore, how much water will be heated up from 60 to 212 degrees F. All the water will be heated up from 60 to 212 degrees F. and then one-half of the water will be evaporated at 212 degrees F. The latent heat of evaporation of water (to be explained later) is 970 B.t.u. per pound of water. If W is the weight of the water, then one-half of W will be evaporated. The quantity of heat required to do this will be $\frac{W}{2} \times 970$, and the heat required to raise the entire mass of water, W, from 60 to 212 degrees F. will be (212-60)W, or 152W. Hence the entire quantity of heat necessary to effect both the heating and evaporating operations is equal to $\frac{W}{2} \times 970 + 152W$, or 637W.


PROBLEM IN-
CHANGE OF STATE
Steam
Insulation
Original Temperature of Water 60°F.
Mass of Iron Weighing 5 Tons.
Temperature of Iron mass 2000°F.
—How Much Water is Evaporated?
Heat Released = 1000 lbs x 1.788 x 0.15
= 2,682,000 B.T.U.
(1.788 is Temp. Differential (2000-212); 0.15 is the Specific Heat of Iron)
One-half of Water is assumed to Evaporate.
All Water is raised from 60°F. to 212°F.
Hence Water Evaporated is equal to W/2 x 970
(970 is Latent Heat of Evaporation of Water)
Water Evaporated is found to be 4210 lbs.
(637 W = 2,682,000)

The law of heat interchange states, assuming that no heat is lost by radiation, etc., that the heat that is released is equal to the heat that is absorbed. Thus, the following equation may be written:

$637W = 2{,}682{,}000$, or W is equal to 4,210 pounds.

In other words, the quantity of water that was evaporated by the heat in the iron was 2,105 pounds.

A Cake Baking Contest

Some publicity for gas and gas appliances as conducted in San Francisco

Charles W. Geiger

THE San Francisco Housewives League, in conducting the cake-baking contest, was assisted by the Gas Appliance Society dealers of San Francisco, who make it possible for the league to offer valuable prizes for the best cakes. The cake-baking contest prizes were awarded on the decision of a jury committee.

Prizes Awarded in Contest

There was one grand prize for the best cake and several honor prizes for the best of each of the two kinds of cakes mentioned. The grand prize was the choice of any model, even-temperature control gas range displayed among the gas appliance dealers in San Francisco, costing no more than $150 (if a winner preferred a more expensive range she was allowed to pay the difference). The honor prizes were valuable articles of kitchen equipment donated by the leading Gas Appliance Society merchants. The honor prizes were displayed in the window of the Pacific Gas & Electric Company and are shown in the accompanying photo. The total value of the prizes offered was about $500.

Thursday, April 23, between 11 a. m. and 3 p. m., was the time selected to receive the cakes. They were delivered to the Pacific Gas & Electric Company and were on display Thursday afternoon, the judges making their awards at about 4 o'clock that afternoon.

The Housewives League was fortunate in conducting this cake-baking contest at that date, because it came during the "1925 Gas Appliance Exhibit,"

One of the Exhibits

April 20-26. During the week the Gas Appliance Society dealer stores exhibited the most modern and efficient gas appliances.

CUSTOMER OWNERS HAVE MORE THAN DOUBLED SINCE THE WAR

The number of stockholders in gas and electric light and power companies has slightly more than doubled since 1918, according to a survey, the results of which were reported at a recent meeting of the Academy of Political Science in New York.

The report was made by Robert S. Binkerd, vice-chairman of the Committee on Public Relations of the Eastern Railroads.

The increase in customer stockholders in this class of public service companies since January 1, 1918, has been 815,955, said Mr. Binkerd. The increase of all classes of stockholders in these companies during that period was 1,361,279. In 1919 there were 1,250,000 investors in common and preferred stocks of gas and electric companies, as compared with a total of 1,283,511 in all other industries for which statistics were available, including the railroads. Today there are 2,611,279, as compared with 2,400,900 in all other industries.

Mr. Binkerd also pointed out that 75,000 more employees of gas and electric companies own stock in their company today than did so in 1918, and that 815,955 more customers have become owners of the public services that supply them with gas and electric service since that year.

More than 470,000 stockholders have been added during the last seven years from the general public outside of the classes mentioned.

At least 3,500,000 stockholders have been added since 1918 to the lists of our public utilities and corporate enterprises, Mr. Binkerd estimates. Of these, 500,000 are employees, 1,000,000 are customers and 2,000,000 have been drawn from the general public.

"In addition to the stockholders," Mr. Binkerd said, "there has been an increase of at least 2,500,000 bondholders—on the most conservative basis. In some industries, like the telephone, the street railways and other public utilities, the increase in bondholders is almost parallel to the increase in stockholders. Since 1918 more than 28,000,000 new savings accounts have been opened and the aggregate amount of savings deposits has nearly doubled."

As The Journal Views It

BITUMINOUS COAL AS A GENERATOR FUEL

The leading article in this issue of the American Gas Journal is concerned with a discussion of the use of bituminous coal, in admixture with other fuels for the manufacture of water gas. The article in question not only contains a discussion of the economies effected by the use of such fuels in actual plant operation, but also contains some very pertinent remarks concerning an apparent inertia existing at the present time in the gas industry, which has retarded extensive use of soft coal in the water gas process.

Within the last few years the gas industry as a whole has shown marked progress. Gas men have become imbued with a spirit of enthusiasm in their work, a keen appreciation of the possibilities of gas as the premium fuel in the home and of industry. This has resulted in the development of the industrial gas field to considerable extent and now there is scarcely any gas man who is not thoroughly sold and convinced that under the proper conditions gas is the only fuel for any industrial operation wherein heat is employed. Similarly in the house-heating field great progress has been made and many companies now possess house-heating loads of real consequence and are exerting every effort to secure more of this business.

Progress has also been made in the technical field. Perhaps, on a comparative basis, it may be found that more has been done in experimentation and investigation on the technology of gas manufacture and distribution than in any other branch of the gas industry. But it is a fact, as has been shown in the aforementioned article, that while much experimental work has been undertaken by gas companies and is being carried out at the present time, nevertheless the industry has been rather slow to accept certain important results that have been evolved from this work and that clearly indicate the possibility of attaining significant economies in gas manufacture.

It is true, however, that conditions in the gas industry vary considerably, according to the locality in which the gas company is situated. This pertains particularly to economic conditions, such as nearness of the gas works to the coal fields, the ease with which manufactured coke is disposed of among domestic and industrial customers and to many other factors as well. Nevertheless, it behooves every gas company to study carefully the results that are obtained from experiments in gas technology as carried out in some other gas plant. It cannot always be expected that the same economies can be secured in every gas works where the new process is employed or, in fact, that any economy at all can ensue from it.

But if the gas industry is to progress, if the industrial gas man and the sales force of the gas companies in general are to be given the proper co-operation, so that they can go out and sell gas for any purpose whatsoever, if it is expected and desired that gas become the universal fuel, it is necessary that every opportunity be taken advantage of to improve the manufacturing operation and to affect greater efficiency and economies therein.

The technical gas man is urged to read the paper by Mr. Smith that appears as a leading article in this issue. It contains results of actual experimentation that are very much worth while studying. It broaches a subject that ought to be of interest to every gas technologist engaged in water gas manufacture. It depicts actual operating conditions in which a bituminous coal was used as a generator fuel and answers a good many objections that have been raised, more or less thoughtlessly, against the use of this fuel for water gas manufacture.

This is the type of work that makes for progress. It is the kind of research and experimentation that carries any industry along, and makes its position secure in the business world. It has been emphasized time and again that the only way in which any indusry can maintain a dominating place in human

enterprise is to be constantly striving for increased efficiency, for reduction in cost of operation, so that a product is obtained of highest quality at minimum expense. The gas industry must take cognizance of all techniacal developments, must experiment and do everything in its power possible to improve its manufacturing operations and reduce costs, if gaseous fuel is to become, what we all hope it will eventually be, the premier fuel for all domestic and industrial purposes.

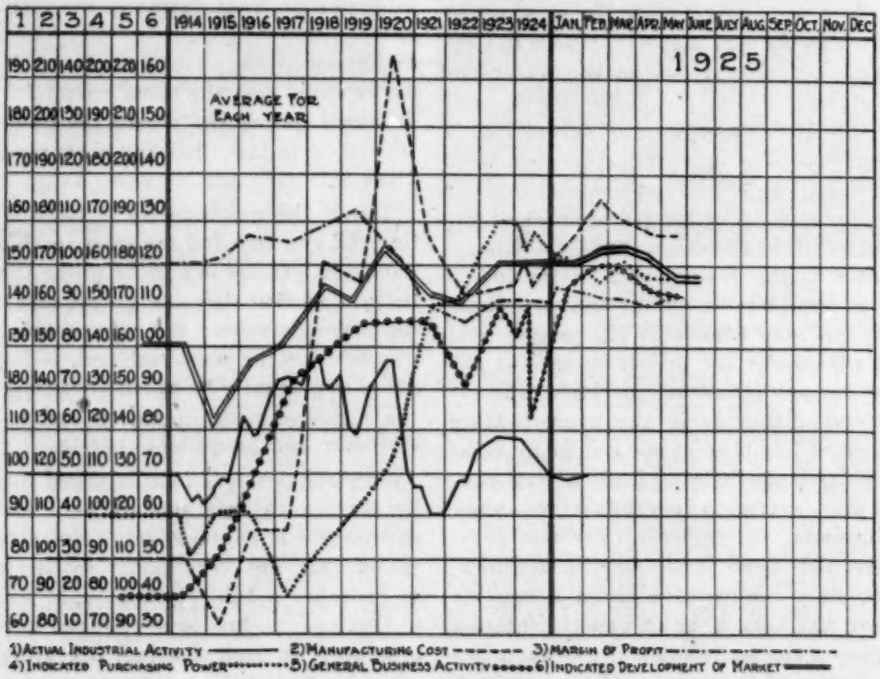
Spring Business Below Expectations

No need for alarm--logical evolution of market will bring automatic solution of present problem

L. W. Alwyn-Schmidt

AFTER the economic unrest of the last few months, signs of a near improvement are now appearing. True, such signs are still hardly noticeable and a downward trend, in fact, is reported in many industries, but their accumulative effect has nevertheless been of sufficient strength to exert a steadying influence upon the market. Hence, the economic situation looks more hopeful today than it has looked for many months.

America ranks among the leading industrial producers of the world. But, while its factories are turning out merchandise at an immense rate, its industries rely upon a market practically 60 per cent of which is agricultural or at least semi-agricultural in character. Being almost in the sole possession of its market, American industry has equipped itself to supply its varying needs, showing little or no inclination to export upon a large scale. Theoretically, the possession of this market should be very advantageous. The enjoyment of this very satisfactory arrangement, however, is somewhat impaired by the fact that the agricultural section of the market depends upon foreign markets for its prosperity and resulting purchasing strength. Anything that disturbs the consumptive capacity of the foreign customer of the American farmer is, in consequence, bound to reflect upon the American industry.


1 2 3 4 5 6
1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEP. OCT. NOV. DEC.
1925
AVERAGE FOR EACH YEAR
1) ACTUAL INDUSTRIAL ACTIVITY
2) MANUFACTURING COST
3) MARGIN OF PROFIT
4) INDICATED PURCHASING POWER
5) GENERAL BUSINESS ACTIVITY
6) INDICATED DEVELOPMENT OF MARKET

A Peculiar Situation

We have, therefore, the peculiar situation of a

(Continued on page 515)

PROGRESS IN GAS TECHNOLOGY
Domestic and Foreign

LOW-SULPHUR COALS FOR WATER GAS MANUFACTURE

BY the use of properly designed equipment the low-sulphur coals of the Middle West, which are not regarded as first grade coal for coal gas and coke manufacture, can be made to give almost as good results in the generation of water-gas as can be obtained from the more expensive Eastern high-volatile coals, according to Technical Paper 335, of the Bureau of Mines. The extensive use of Illinois, Indiana and other mid-Western coals in water-gas generation, in substitution for the coke from Eastern coals, is important in that more coke is thus saved for use in industries where bituminous coal cannot be employed to advantage; moreover, transportation of coal from Eastern fields is avoided.

The fuel consumption per unit of gas production has been so reduced, especially in the smaller water-gas sets, as to place bituminous coal almost on a par with low-volatile fuels, even at the same price per ton. Results have not been so promising for the larger sizes of water-gas sets—that is, those having generators 8 feet 6 inches or more in diameter—in which the tendencies hindering good efficiencies seem to be emphasized. In the water-gas sets of 11-foot generator diameter—the largest size commonly installed—these unfavorable tendencies are especially marked.

This paper summarizes the tests made at Joliet with a water-gas set, shows the practical efficiencies obtained, and discusses economic phases of the process in order that operators who contemplate using bituminous generator fuel may have some data upon which to base calculations when they try to estimate whether the use of such fuel would be economically feasible.

MODERN METHODS OF COKE QUENCHING

A RESUME of modern methods for quenching of coke is given in an article that appeared in the May 2 issue of the Gas World.

In this article are described the disadvantages of the present wet processes of coke quenching. These are numerated to be the formation of fissures in the coke structure, the hardening of the coke by the chilling process, making it more liable to fracture and to form breeze during handling, as well as the trouble of producing a fairly dry coke, while insuring complete quenching. It is also found that from 3 to 10 per cent moisture is left behind in the coke and the effect of the moisture is by no means inconsiderable when this kind of coke is used. Calculation is made to show how much heat is lost by the wet quenching of coke.

There are described various dry cooling processes such as the Sulzer process, Low-Temperature Carbonization Company process and the Collins process.

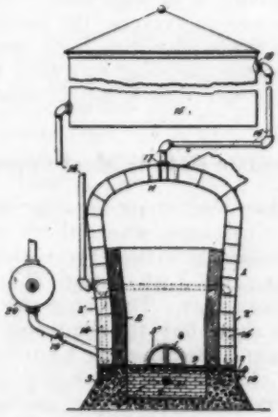
As is known, the Sulzer process consists in cooling the coke in air-tight chambers by passing inert gases through the hot mass.

The Low-Temperature Carbonization Company process consists in discharging the heat coke into air-tight chambers surrounded by water and allowing the fuel to remain there until it cools off.

In the Collins process the hot coke is discharged into the cooling pockets, which are located below the flat coke bench. The cooling operation takes six hours and inert gases are circulated through the coke and then conveyed to a tubular boiler plant, where the heat in the gases is used.

WATER JACKETED GAS PRODUCER

THE gas producer which is seen in the accompanying photograph is characterized by a water jacket and special means for circulating water through this jacket. The producer comprises a base which has an upward extending wall and another fire wall erected similarly and spaced from the outer



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edge so as to form a seat. A grate is mounted in the base within the upward extending wall and the water jacket surrounds the fire wall, with its lower end resting upon the seat of the base wall. The water jacket, which is seen at 2', has two extensions above the upper end of the fire wall, which is shown at 2', and forms the top of the producer. Means are also provided for circulating the water through the water jacket.—(United States Patent No. 1,533(929).

Public Utility Regulation

Its benefits and abuses

E. Bently Hamilton

UNDER the old system when we used to have to deal entirely with the city councils or counties or some local regulatory political unit manifestly it was unsatisfactory and unjust because here were two parties to a controversy. Here was the utility claiming one thing and here with the city claiming another thing, both interested parties. So we came to the matter of regulation, which is based upon the well recognized and thoroughly American principle of arbitration.

Now commisions have gained in knowledge, commissions have grasped the problems of the utilities and at the same time generally have retained the viewpoint of the user of the utility so that it has been able to adjust and pass upon these problems with both of these interests in its mind.

Advantages of Regulation

Under the advantages of utility regulation we have a uniformity in standards of service; we have a uniformity in rate schedules; we have a uniformity of regulation that it was never possible to obtain where the power of regulating was vested in a city council or county board. Now the man who says that he is a proponent of home rule, for instance, who says that the city ought to retain the power to regulate as against the State, is uttering a proposition that is just as poor logic as it is unsound as a legal maxim.

From the law we have this principle that the power to regulate is in the State. The city has no right or no power to exercise the power of the State except as the State may give it or delegate it to the city. It is another familiar rule that the State can't give away a power that it has beyond its ability to take it back.

Adequate Rate Is Most Important

Now, we have that question arise under franchise provisions, for instance, where there was a provision in a franchise fixing a fare for a street railway or fixing a water rate or what-not. The city said, "Oh, you can't change that. That is in the franchise, you can't change that, but the Supreme Court of the United States and the Supreme Court of other States said you can change it because the city in the first place couldn't make a binding contract that took the rate beyond the power of the State to alter.

The most important thing to the utilities, as well as the most important thing to the user of the service, is the question of rate, of adequate rates. What do we mean by an adequate rate or a fair rate? We mean a rate that enables the utilities first to pay its operation, its expenses of operating and its taxes, secondly to set aside a fair amount for depreciation; third, a fair return to the investor, and in qualification of the fair return to the investor we mean a return that is fair enough to invite capital to become invested in the business.

Now let us see where he stands. He is the man user has the first say before the commission on the him. He first says good service. Yes, we say as question of rates. Let's see how far we agree with good service as the utility is reasonably able to render. At a cheap rate, that is what the user may say, he wants a cheap rate. There is the rub. That is where we part company, if by a fair rate he means a cheap rate. A cheap rate is never a fair rate. It isn't fair to the utility and it isn't fair to the user.

Public Is Not Served on Inadequate Rate

Commissions ought to recognize, and I think generally do recognize now, that the public isn't served by an insufficient and inadequate rate.

Anything less than a return that invites additional capital is confiscation of property. Our Constitution guarantees life, liberty and the pursuit of happiness. Life isn't worth much unless property rights are guaranteed. The pursuit of happiness is certainly a vain pursuit if it isn't held in security. So we come down to the question of protecting adequately the property of the utility and the service of the consumer.

The Labor Question

There is another theory it seems to me of regulation that ought to be worked out and that is this: Your regulatory bodies have nothing whatever to do with wages that are paid nor with the taxes that are paid. On the one hand you have labor saying we must have this; on the other hand you have the commission saying that is all you can sell your product for, without any relation between the two so far as that body is concerned.

The commission that fives your rates ought to have some power to fix your expenditures for taxes and perhaps your expenditures for labor. Emerson said that one idea was worth all the animals and all the men and all the engines in a century. But an idea without development, an idea without production, a theory without utilization is merely an idle conception.

Public Respect Gained

The utility industry has gained in public respect. Why? Because it has stood erect in the face of unwarranted attack and unjust criticism. Its knees have just been as inflexible as an iron yoke in the

(Continued on page 516)

*From address before Oklahoma Utilities Association.

Catechism of Central Station Gas Engineering in the United States

Installment No. 74

(Continued from last week)

Qualities of Different Cements

Ans. Some hydraulic cements are made from rock which contains approximately the desired proportions of limestone and clay. These are known as "natural cements," and are sometimes called Rosendale cements, from a town in New York.

In the manufacture of some hydraulic cements the limestone and clay are mixed artificially, and in definite proportions, before burning, and the product of this process of preparation is known as "Portland cement." This cement, being a mixture of exact and predetermined proportions of the necessary materials, is a more valuable building material than most of the natural cements.

Portland cement takes its name from the resemblance artificial stone made of it bears to stone found on Portland Island, south of England. The original Portland cement was a natural cement, but the name is now used to distinguish the cements made from an artificially prepared mixture of ingredients as detailed above.

From good authority we have the statement that cement owes its hydraulic quality to certain silicates and aluminates of lime formed during the burning, by the action of the heat, and which possess the property of taking up water of hydration and crystallizing to a hard and compact mass.

Portland Cement

355. What is Portland cement, how is it made, and what tests should be applied to any given sample to determine its quality?

Ans. The name Portland cement was first given to a natural hydraulic cement prepared by calcining a limestone containing from 20 per cent to 22 per cent of clay composed of 1½ to 2 parts of silica to one of alumina and 78 per cent of carbonate of lime. At present the name is practically confined to a class of artificial hydraulic cements made by thoroughly mixing together in suitable proportions (approximately as above) clay and finely pulverized carbonate of lime (either chalk, marl or compact limestone), burning the mixture in kilns at a high heat and then grinding the burnt product to fine powder between ordinary millstones.

The superiority of Portland cement appears to depend in great measure upon the presence of the double silicate of lime and alumina, which is formed only at a high heat. The weight of Portland cement, as well as its hydraulic energy and its ultimate strength and hardness, is increased by augmenting (within the limit of vitrification) the intensity and duration of the heat employed in burning. The initial hydraulic activity, however, is diminished by high burning, so that the best Portland cements are slowest in setting. A cement weighing 100 lb. to the bushel may be burnt so as to weigh 125 lb. to the bushel, and its strength will be nearly doubled thereby.

Its Properties

"The properties of a cement which are usually examined to determine its constructive value are: (1) color, (2) weight, (3)activity, (4) soundness, (5) fineness, and (6) strength. The last three are the most important.

"Color. The absolute color of a cement indicates but little. With Portland cement, gray or greenish gray is generally considered best; bluish gray indicates a probable excess of lime, and brown an excess of clay. An undue proportion of the under-burned material is generally indicated by a yellowish shade, with a marked difference between the color of the hard-burned, unground particles retained by a fine sieve and the finer cement which passes through the sieve.

"Weight. For any particular cement the weight varies with the degree of heat in burning, the degree of fineness in grinding and the density in packing. Other things being the same, the harder-burned varieties are the heavier. The finer a cement is ground the more bulky it becomes and consequently the less it weighs. Hence, light weight may be caused by laudable fine grinding or by objectionable underburning.

"The weight per unit of volume is usually determined by sifting the cement into a measure as lightly as possible and striking the top level with a straight edge. In careful work the height of fall is specified. The weight per cubic foot is neither exactly constant, nor can it be determined precisely, and for the practical purpose of the user is of very little service in determining the value of a cement. However, it is often specified as one of the requirements to be fulfilled.

Requirements

"The following values, determined by sifting the cement with a fall of three feet into a box having a capacity of one-tenth of a cubic foot, may be taken as fair averages for ordinary cements. The differ-

ence in weight for any particular kind is mainly due to a difference in fineness:

Portland, English and German..77 to 90 lb. per cu. ft.
Portland, fine ground French.....69 lb. per cu. ft.
Portland, American.....95 lb. per cu. ft.

"Test of activity. 'To test hydraulic activity, mix cement with 25 to 30 per cent of its weight of clean water having a temperature of between 65 deg. F. and 70 deg. F., to a stiff plastic mortar, and make one or two cakes or pats 2 or 3 inches in diameter and about ½ in. thick. As soon as the cakes are prepared, immerse in water at 65 deg. F., and note the time required for them to set hard enough to bear respectively a 1-12 in. wire loaded to weigh ¼ lb., and a 1-24 in. wire loaded to weigh 1 lb. When the cement bears the light weight, it is said to have begun to set; when it bears the heavy weight, it is said to have entirely set.' Cements, however, will increase in hardness long after they can just bear the heavy wire. The activity of the cement is measured by the time which elapses between the time when the first weight is supported and that when the second is just borne."

A committee of the American Society of Civil Engineers recommended the following tests for soundness (or the property of not expanding, or contracting, or checking in setting), fineness and tensile strength.

"It is recommended that tests for hydraulic cement be confined to methods for determining fineness, liability to checking or cracking, and tensile strength; and for the latter, for tests of seven days and upwards, that a mixture of 1 part of cement to 1 part of sand for natural cements, and 3 parts of sand for Portland cements, be used, in addition to trials of neat cement. The quantities used in the mixture should be determined by weight.

Sampling

"Sampling. There is no uniformity of practice among engineers as to the sampling of the cement to be tested, some testing every tenth barrel, others every fifth, and others still every barrel delivered. Usually, where cement has a good reputation and is used in large masses, such as concrete in heavy foundations, or in the backing or hearting of thick walls, the testing of every fifth barrel seems to be sufficient; but in very important work, where the strength of each barrel may in a great measure determine the strength of that portion of the work where it is used, or in the thin walls of sewers, etc., every barrel should be tested, one briquette being made from it.

"In selecting cement for experimental purposes, take the samples from the interior of the original packages at sufficient depth to insure a fair exponent of the quality, and store the same in tightly closed receptacles impervious to light or dampness until required for manipulation, when each sample of cement should be so thoroughly mixed, by sifting or otherwise, that it shall be uniform in character throughout its mass.

Checking or Cracking

"Checking or Cracking. The test for checking or cracking is an important one, and, though simple, should never be omitted. It is as follows:

"Make two cakes of neat cement 2 or 3 inches in diameter, about ½ inch thick, with thin edges. Note the time in minutes that these cakes, when mixed with water to the consistency of a stiff plastic mortar, take to set hard enough to stand the wire test recommended by General Gillmore, 1-12 inch diameter wire loaded with one-fourth of a pound, and 1-24 inch loaded with 1 pound. One of these cakes, when hard enough, should be put in water and examined from day to day to see if it becomes contorted or if cracks show themselves at the edges, such contortions or cracks indicating that the cement is unfit for use at that time. In some cases the tendency to crack, if caused by the presence of too much unslaked lime, will disappear with age. The remaining cake should be kept in the air and its color observed, which, for a good cement, should be uniform throughout (yellowish blotches indicating a poor quality), the Portland cements being of a bluish-gray, and the natural cements being light or dark according to the character of the rock of which they are made. The color of the cements when left in the air indicates the quality much better than when they are put in water.

Fineness

"Fineness. The strength of a cement depends greatly upon the fineness to which it is ground, especially when mixed with a large dose of sand. It is therefore recommended that the tests be made with cement that has passed through a No. 100 sieve (10,000 meshes to the square inch), made of No. 40 wire (Stubbs' wire gauge). The results thus obtained will indicate the grade which the cement can attain, under the condition that it is finely ground, but it does not show whether or not a given cement offered for sale shall be accepted and used. The determination of this question requires that the tests should also be applied to the cement as found in the market. Its quality may be so high that it will stand the tests, even if very coarse and granular; and, on the other hand, it may be so low that no amount of pulverization can redeem it. In other words, fineness is no sure indication of the value of a cement, although all cements are improved by the fine grinding. Cement of the better grades is now usually ground so fine that only from 5 to 10 per cent is rejected by a sieve of 2,500 meshes per square inch, and it has been made so fine that only from 3 to 10 per cent is rejected by a sieve of 32,000 meshes per square inch. The finer the cement, if otherwise good, the larger dose of sand it will take and the greater its value.

(Seventy-fifth Installment Next Week)

APPLE, MINCE OR PEACH

(Continued from page 505)

motor, which also drives a positive pressure blower, which delivers air at one pound pressure to the mixing T at the burner where it is mixed with the gas in proportion necessary for perfect combustion.

The temperature in the oven is varied from 450 to 550 degrees F., depending upon the kind of pie being baked. The average time each pie is in the oven is between 21 and 25 minutes, also depending upon the kind of pie. The baking period is regulated by varying the speed of the conveyor.

The Saving

The Hutchinson Company has not been operating this oven long enough yet to determine exactly how much of a saving will be effected. However, the gas oven replaced four coal-fired ovens, resulting in a saving in labor of four skilled men, and a gain in needed floor space of about 50 per cent. Eight skilled men were required to perform the preparing and baking operations when the four coal-fired ovens were in use, and now four men operate the gas-fired oven and auxiliary apparatus.

At present this oven is being operated 10 hours a day five days a week and the gas consumption amounts to about 250,000 cubic feet a month.

The gas-baked pies are uniform in color and perfectly baked throughout.

Aside from its several decided advantages from an economic standpoint, the cleanliness of the gas oven is sufficient recommendation for its installation in modern sanitary baking establishments.

SPRING BUSINESS BELOW EXPECTATIONS

(Continued from page 510)

large industry, having no export market to speak of, being nevertheless dependent for its sales upon a consumer who must export to be a customer. This feature of our economic situation cannot be sufficiently emphasized. It is responsible for many of the contradictory developments in our own market and it must be kept continually in sight when an attempt is made to forecast the future development of the American market.

If hope is to be drawn from the present economic constellation, it is to be found in the good news from Europe, where the stabilization of national currencies is progressing very satisfactorily and where, in consequence, a new and sound market is building for American farm products. It is now certain that the European consumer will help draw off the surplus production of our Western farms and, by doing so, provide that little extra cash that is required to bring contentment and spending power to the American farmer.

No Need for Alarm

Under these circumstances we do not need be unduly alarmed about the reduction in the industrial employment ratio and the lowering of wages in many branches of industry. These are sufficiently balanced by price reductions in life's necessities. The national purchasing power, which has shown a decline during the last months, is showing signs of returning steadiness, with every indication for a slow upward movement in the near future. The combined purchasing power of the farmer and the industrial wage-earner in this manner should provide a satisfactory outlet for the products of our industry.

It is this eventuality which our manufacturers will have to bear in mind when laying their plans for the summer and autumn. Just now they are marking time, waiting for a decisive cue pointing the direction in which the market will turn.

Industry Well Prepared to Stand Stress

As it is, the industry is well prepared to withstand the unavoidable stress of a situation like the present. Three months of careful husbanding af all financial resources have materially improved the credit situation. There is a greater liquidation of accounts and the market has freed itself of undesirable ballast. Stocks of merchandise are low and the retailers are ready to take care of any improvement in the market on the first reliable indication.

Manufacturing costs, which have been rather high in many industries in the early part of the year, have been reduced, bringing, in turn, a slight increase in the industrial profit margin. This, in part at least, has been applied to strengthen the financial reserves of the industry and provide the necessary means for expansion, should this become necessary at the end of the summer.

The Future of the Market

It would be a mistake, however, to appraise the chances of the future development of the market entirely upon the basis of a present showing. The weather, a deferred buying movement, the European recovery, are at the best only incidents in a bigger development, moving not as the result of seasonal fluctuations, but upon large periods of ascend and decline. And, judged from the wider point of view, the market appears to be collecting force for a new upward movement. The principal reasons in favor of this theory are:

(1) There has been no expansion of industrial production since 1922.

(2) During the same period the market has grown in magnitude of consumers' financial resources, expectation of comfort.

(3) The period of monetary and economic adjustment has come to an end and a new balance is near.

These three forces must come to the surface of the market soon. They cannot fail to bring its pressure upon the economic life of the nation, creating a strong purchase movement upon an industry equipped to handle a normal demand only.

MAKING FRIENDS OF THE HOUSEWIVES

(Continued from page 506)

Foods that charm the appetite, even as dainty spring clothes lure the eye, are the specialty of our cooking experts.

In addition to the daily afternoon classes, there is an evening class on Monday at 7:15. Here is the menu for next Monday night:

Broiled halibut with tartare sauce—Nut Cookies
—Compote

Aid on Other Domestic Problems

In addition to the cooking demonstrations, helpful talks are given on many domestic topics, and the harassed housewife, in scanning the paper, heaves a sigh of relief when she comes across an ad such as:

HEAR TODAY'S TALK AT THE LACLEDE GAS COMPANY ON

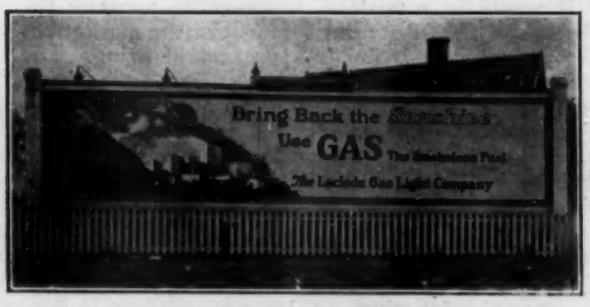
"How and What to Buy for the Table."

Come to our FREE COOKING CLASS at 2:00 p. m. and hear suggestions on marketing by a trained Home Service speaker. Flour, rice, barley, cereals and the like will be discussed today.

Then followed the menu that was to be cooked and demonstrated at the Monday classes, both afternoon and evening. There was always something helpful in the talks and the menus were dainty, yet nourishing and practical.

Broadcasting Home Service

The company gives home service help to thousands of people living many miles from St. Louis. Every Thursday at 4 p. m. Miss Wetherell broadcasts from the station of the Post-Dispatch (one of the leading local newspapers) a home service talk that is a part of their Home Hour program. Likewise, every morning at 10 there is broadcasted a home service talk. These talks are especially appreciated by farmers' wives, and while they are drinking in the helpful messages of the domestic science expert they are unconsciously absorbing a desire for more modern equipment, and they soon become familiar with the Laclede company.



Advertising Gas on the Billboard

Advertising on Billboards

Another way in which they increase the desire for gas is by means of billboards. These are artistic in conception and not even the most rabid objectors to outdoor signs could find fault with them. In fact, all civic organizations would welcome them, for they urge the means of making the City Beautiful:

Bring Back the Sunshine
Use GAS, the Smokeless Fuel
The Laclede Gas Light Company

In speaking of these billboards, it has been said that billboards are an excellent advertising medium when your message can be condensed to a very few words or to a small illustration, the meaning of which can be got at a glance. Most billboards have to rely for their effectiveness upon observation by persons in automobiles, street cars or busses. These move rapidly and usually the individual has not more than 30 seconds in which to observe a signboard. The boards are regarded as very well suited to advertising the advantages of gas generally, but do not think much of them as a medium for appliance advertising. The Laclede Gas Company had a series of billboards last winter with which they advertised gas—urging the use of gas for house heating. It is getting at the same thing now with a series of "smoke" boards, urging the consumption of gas in residences and factories as a means of abating the smoke nuisance and making St. Louis truly the City Beautiful.

PUBLIC UTILITY REGULATION

(Continued from page 512)

face of jeer and taunt. It has done those things that it believed to be right for its owners, its employees, its users and the public in general; and today, as a result of that attitude, the public utility stands forth in its new era of reconstruction, in the white light of publicity tested in a crucible of human experience, living because it deserves to live, and holding an unconquerable position.

A political system has just two objectives. First, liberty, and secondly, security. The freedom of worship, a free press, freedom of debate. These upon the stage of liberty are part of her settings, her scenes—the mass meetings with the voices of many people pervade her atmosphere.

But the institutions of security are in a different arena. They are in that quiet forum the court which is constructed to regulate the government, the judge to administer and interpret the laws, and there is no sounding of trumpets, no beating of drums, no crowd marches there to unthrone reason and to impose restraint, but here in those tribunals to which we may have access; there is security: there the rich or poor, the powerful or weak; the corporation or individual, all safe and all secure in that justice which is for all people a temple, safe and secure.

BITUMINOUS COAL AS GENERATOR FUEL

(Continued from page 504)

Blow Run

The matter of blowing up the plant with the blow run is one which needs little comment. We can blow up plants without the blow run as well. It is a matter of ordinary care and judgment. In reference to this objection to the blow run, it may be mentioned that the superintendent in charge of this plant, some 15 or 20 years ago, had a small fan blower belted to a reciprocating engine. The pressure thrown by the blower was probably very much less than we now use and this referred as well to the quantity of air delivered. Of course, the blower pressure and gas backed up and exploded. With the modern equipment such a condition is rather remote. In this case, however, this plant was allowing the possibility of attaining considerable economy rest on experience gained years ago, while the industry had stepped ahead in the meantime.

Air Purge

The air purge is simply a means of clearing a set of the blue gas and some oil gas at the end of a run. It simply means conserving those gases left in the set that formerly were blown out the stack.

For the results of a test on this method of operation the reader is referred to an article by the writer in the Gas Age of December, 1920.

Consumers' Meters

We recently had an inspection of our gas meters by outside operators. Their verdict was that our meters indicated nothing that was detrimental to their life outside the ordinary elements of corrosion. We had no fears of any other verdict, as we are simply distributing a mixture of carburetter water gas, coal gas and producer gas, and all of them have for years been handled by ordinary meters.

There seems to be no reason for supposing that meter corrosion or diaphragm life would be changed by the methods in practice at our plants.

Sticking Valves

We have had sticking valves, but this trouble is not serious. In mixtures up to 60 per cent this trouble is nil. We paint our valve stems with gas oil two or three times per day and that is all that seems necessary.

The blow run on coke could be used, but the difficulty would be that the deficiency of volatile in coke would make the producer gas thus obtained very lean, and in order to maintain a prescribed heating value excess oil would be required and the economy of the operation may be upset. The blow run would not be as economical with coke as it would be with gas coal.

Mats and Smoke

In percentages up to 60 per cent we have no difficulty from either of these. We bar the fire down after every soft coal charge, before the next succeeding charge. This is done with an ordinary gas pipe and takes but a fraction of a minute. We have had no difficulty from matting.

The cycle we use cuts smoke to a minimum. In none of our plants have we had any complaints from this source and it has been demonstrated that soft coal operation can be carried out with very little smoke.

Operating Floor at Poughkeepsie

Other Objections

Along with those commented upon above there are a great many other questions that could be asked and answered. There are still those in the industry who are endeavoring to ascertain whether bituminous coal can be used as a generator fuel. The answer to this question, it seems to me, is not "can it be done," but it is being done, and it only remains to see how to apply the principles of economy in your own case. If it looks good, get busy! The preliminary research and hard knocks have all been suffered

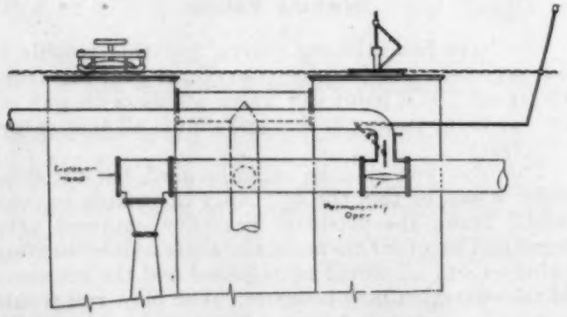
by the pioneers in this field, and it only remains for the rest to follow.

What of the Future?

It is not only the present status of industry which invites the use of bituminous generator fuel, but also what the future holds.

It is the belief of the writer that the following is true:

1. That the future of the economics of water gas operation depends on bituminous generator fuel.
2. That, because of bituminous generator fuel, water gas plants will be in a better position to face a rising price in oil.
3. That research should be carried on in the matter of powdered bituminous generator fuel for continuous generator operation to the end that a gas can be made without oil and of a heating value that will allow the gas to be used in present-day appliances with allowance as well for expansion in its use.
4. Water gas plants will always be essential on account of the load factors now placed upon them, which load seems destined to become greater with house heating of the future. In this case the importance of its economic development cannot be overestimated.



Butterfly Valve Arrangement for Air Purge and Blow Runs

Results (Poughkeepsie Plant)

The following are typical results over a period of seven months.

The present bituminous coal used varied over this period, as the percentages were low during experimental stages of the operation. The average percentage over seven months was 51, while we have operated as high as 80 per cent on several successive days.

Bituminous Generator Fuel Results (Poughkeepsie Plant)

	100% Coke	40% Coke 60% Bit.	Per M. with mixture Gain	Per M. with mixture Loss	Per M. with mixture Gain	Per M. with mixture Loss
Generator Fuel per M	35	31.9	3.1lb			
Gas Oil per M	3.28	3.35		.07 gal.		4c
Price Generator Fuel (Net Ton)	9.00	7.20	$1.80		4.27c	
Price Oil	6c	6c				
Value Screenings (Net Ton)	1.50	$4-$5			6c	
Extra Maintenance						4c
Net Gain Saving per M						4.07c

Comments

The saving shown here is what can be realized under conditions as they exist in our districts. The answer to whether or not this same is true in other districts would have to be worked out from a study of the conditions as to price of raw materials existing in that locality.

In order to facilitate the working up of the probable savings, the attached typical table is given. A table of this kind should be worked up based on prices of raw materials and then the experiment started with bituminous generator fuel. After a few weeks' test it will be discovered that there is a mixture that is most economical to use. The ultimate should be a percentage of bituminous coal that will put gas into the holder at the lowest cost per M.

Figures based on: Coke @ 9.00 net and bituminous @ 6.00 net.

Cost per M. at Various Fuel Averages

% Bit	Value per ton Mix	Mix per Lb.	30	31	32	33	34	35	36	37	38	39	40
40	7.80	.0039	11.70	12.10	12.48	12.87	13.26	13.45	14.04	14.43	14.82	15.21	15.60
50	7.50	.00375	11.25	11.62	12.00	12.38	12.75	13.13	13.50	13.88	14.05	14.63	15.00
60	7.20	.0036	10.80	11.16	11.52	11.88	12.24	12.60	12.92	13.32	13.68	14.04	14.40
70	6.90	.00345	10.35	10.70	11.04	11.38	11.73	12.08	12.42	12.77	13.11	13.46	13.80
80	6.60	.0033	9.90	10.23	10.56	10.89	11.22	11.55	11.88	12.21	12.54	12.87	13.20

Figure Oil— .06 gal.

Cost Per M. for Oil at Varying Quantities per M.

Gals.	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8
	16.8	17.4	18.0	18.6	19.2	19.8	20.4	21.0	21.6	22.2	22.8

NEWS OF THE GAS INDUSTRY

Southern Gas Men Meet--Interesting Business and Entertainment Program Enjoyed

(By Special Correspondent)

The 17th annual convention of the Southern Gas Association convened Tuesday, June 9, President William H. Taylor presiding, at Wrightsville Beach, N. C.

The weather at Wrightsville Beach was delightful, with clear skies and bracing breeze, and a large number of delegates enjoyed themselves immensely. At the opening session Major Alexander Forward, secretary-manager of the American Gas Association, delivered a most interesting talk, his subject being, "Heat Through the Ages." This paper was most interesting and the association gave a rising vote of thanks to Major Forward.

Mr. C. J. Weinmester, superintendent of distribution of the Georgia Railway & Power Co., Atlanta, Ga., presented an instructive paper entitled "Gas Distribution." This paper was very ably discussed by Mr. Charles F. Carter, engineer of the Nashville Gas & Heating Co., Nashville, Tenn.

Campaigning for gas ranges was presented by Mr. A. F. Timberlake, of the American Stove Co. of Lynchburg, Va. This paper was discussed at length, all of which proved most enlightening. The president's address was devoted mainly to the chair in gas engineering now being successfully conducted at the Johns Hopkins University.

President Taylor urged the gas companies to remember also their older employees, the pioneers of the gas industry. Mention was also made of the progress of the gas industry during the past ten years. During Mr. Taylor's term of office as president the membership has been increased 55 per cent. The chair in gas engineering was successfully started. Better co-operation exists between gas companies and appliance and equipment manufacturers and closer co-operation between State public utility bodies and individual companies. Past President Edward L. Rieha, now chairman of the committee on gas engineering

William H. Taylor,
President Southern Gas Association

course, made a very enthusiastic report of the work now being done at the Johns Hopkins University. Representatives from Richmond, Va., and New Orleans, La., are contending for the 1926 meeting of the association.

The Wednesday business session was devoted to articles on increasing the sale of gas, by E. D. Brewer, Ruud Mfg. Co., Atlanta, Ga., as well as a very interesting talk by F. F. Cauley and discussion by George J. O'Neill on "Industrial Gas." Two other talks were on "Small By-Product Oven Coal Gas Plants," by Harold Rose, and "Gas Production," by C. E. Reese.

The Thursday morning session was devoted to an article on "Office Organization," by G. L. Harris, Chicago, Ill., and a discussion on "Accident Prevention," which was led by J. B. Douglas, U. G. I. Co., Philadelphia, Pa. Reports of various committees were read at the closing session of the convention.

Long Island Gas Rates Approved

Albany, N. Y.—The Public Service Commission has approved the new schedule of the Long Island Gas Corporation for gas service supplied in the villages of Sag Harbor and Southampton and the town of Southampton, county of Suffolk, N. Y. Rate for use for light, fuel and power, changed from straight line meter, $2.80 per M. cu. ft., to block meter (per M. cu. ft.); first 1,000 cu. ft., $2.80; next 2,000 cu. ft., $2.40; all over 3,000 cu. ft., per month, $2; minimum change, $1 per month per meter, no change; effective June 1.

Westchester Schedule Approved

Albany, N. Y.—The Public Service Commission has approved the new schedule of the Westchester Lighting Co., filed as effected May 22, 1925, provide for extension of gas service in new Weaver Street District (immediately east of Scarsdale District). Rates applicable in new Weaver District are the same as now apply in the Edgemont District, via first 100 cu. ft. per meter per month, 80c; next 100,000 cu. ft., $1.95 per M. cu. ft.; next 200,000 cu. ft., $1.90 per M. cu. ft.; next 300,000 cu. ft., $1.85 per M. cu. ft.; next 400,000 cu. ft., $1.80 per M. cu. ft.; all over 1,100,000 cu. ft. per meter, per month, $1.75.

Gas Company to Erect Large Building

Michigan City, Ind.—Plans have been announced for the erection of a $50,000 office building in Michigan City which will house the Northern Indiana Gas & Electric Co.'s local office and the general offices of the Chicago, Lake Shore & South Bend Railway.

The Utilities Building, as it will be known, will be a two-story structure, with provisions made for a future third story, and will embody the newest developments in office building construction.

Utilities Building, Inc., which was recently incorporated, will build and operate the building. The directors of the company are: W. D. Boone, Morse DellPlain, Samuel Insull, Jr., W. B. Manny and W. W. Vail. Mr. Vail is president of the First National Bank of Michigan City and Mr. Manny is a retired merchant.

The following officers were elected at a meeting held here recently: Samuel Insull, Jr., president; W. B. Manny, vice-president; W. D. Boone, secretary; W. W. Vail, treasurer, and R. N. Zeek, manager.

The first floor is to be occupied by the Northern Indiana Gas & Electric Co. A merchandise display room will occupy the front 54 feet and the remainder of the room, which will be 113 feet deep, will be devoted to the accounting department and executive offices, including the office of Mr. Zeek, local manager. Separating these two sections will be the counter at which the customers' business will be transacted.

Through a private stairway the first floor occupants will also have access to the rear of the second floor, where a women's recreation room will be located.

The first floor and basement will be of reinforced concrete construction and the whole building will be of semi-fireproof type. A gas-fired heating plant will heat the building. The rest of the basement will be devoted to storage space.

Business Research Corp. to Move Its Offices

It is nearly five years since Mr. Samuel Insull took the steps which resulted in the organization of the Bureau of Commercial Economies. While this organization, now the Business Research Corporation, is independently incorporated, five of the companies under Insull management are interested in it through stock ownership. Its services have been made use of by these and other companies under the same management to an ever-increasing extent. Its men have worked closely with officers and department heads in bringing about improvements in organization, management, methods, facilities and industrial relations.

The organization does not confine its activities to the public utilities under the direction of Mr. Samuel Insull. For the past two or three years it has done work for other utilities, such as the Hartford Electric Light Co. of Hartford, Conn., the Utica Gas & Electric Co. of Utica, N. Y., the Consumers Gas Co. of Toronto, Ont., and others. Work has also been done for manufacturing concerns, construction companies and business organizations.

The organization of the Business Research Corporation is as follows:

President, John H. Gulick.

Vice-president and director, Stanley P. Farwell.

Secretary, Louis R. Davis.

Treasurer, Arthur F. Drallmeier.

Old Colony Gas Co. Insures Its Employees

New York.—The employees of the Old Colony Gas Co., of Weymouth, Mass., have been given group life insurance by their employer. The contract, which was underwritten by the Metropolitan Life Insurance Company, provides more than 50 workers with life insurance protection totalling approximately $55,000.

Employees who have been with the gas company less than 12 months receive $500 individual protection, which will be increased at the rate of $100 a year until a maximum of $1,000 is reached. Each insured employee is presented with a certificate stating the amount of his insurance.

Department heads and executives are insured under a slightly different plan, but they, too, will benefit by the total and permanent disability clause, which guarantees the entire sum of his insurance to any employee who is completely and permanently incapacitated before his 60th birthday.

A visiting trained nurse is furnished, without cost, by the Metropolitan Life to any ill or injured group certificate holder. The insurance company also distributes at regular intervals interesting and helpful pamphlets on health subjects and sanitation.

Combustion Utility Corp. Moves

The office of the Combustion Utilities Co. in New York City has been moved from 8-10 Bridge street to 60 Wall street. The laboratory of the company is located at 125 Van Dam street, Long Island City.

Keystone Gas Co. Files New Rate Schedule

Albany, N. Y.—The Keystone Gas Co. recently filed with the Public Service Commission a new schedule for gas in the city of Olean and the town and village of Allegany, effective July 1. The proposed new rate is 74 cents per M. cu. ft., as against the present rate of 67 cents. In a letter accompanying the schedule, the company states that it produces no gas, being entirely dependent upon the Iroquois Natural Gas Co. for its supply. The latter company has increased the price of gas to the Keystone company 7 cents per M. cu. ft., commencing July 1.

Elbert Curtis Fisher Passes Away

Elbert Curtis Fisher, vice-president and general manager of the Wickes Boiler Co., died on May 18, 1925.